# INSTRUCTION MANUAL

*For Operating*

# THE UNIVERSAL SUPER-DIATHERM

A. S. ALOE COMPANY

1819-21-23 Olive Street St. Louis, Missouri

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A. S. ALOE CO.,
St. Louis

*Compiled by*
TECHNICAL DEPARTMENT
A. S. ALOE COMPANY
ALOE BLDG., 1819-21-23 OLIVE ST.
ST. LOUIS, MO.

# THE UNIVERSAL SUPER-DIATHERM

# Installation

Having removed the cabinet from the packing crate, open the drawers and take out the accessories. Remove the panel from the back of the cabinet, by turning the catches and pulling out, and take out the boxes found there. Carefully unwrap all of the packages and assemble the contents where they can be easily checked with the packing list. Check carefully and do not destroy any of the packing material until every item has been accounted for. This shipment was checked by three individuals before leaving the factory and found complete as noted on the packing slip.

If there is any evidence of shortage or damage in transit, immediately notify both the local shipper's agent who delivered the shipment to obtain a "bad order" report, and the A. S. Aloe Company, to file claim.

Place the casters found packed in one of the drawers in the holes in the bottom of the cabinet provided for them and tap firmly into place with a hammer.

Examine the inside of the cabinet and note the instruction tags attached to the motor and pump. Fill the oil can with the contents of the bottle of oil included in the shipment. On each end of the motor will be found a small oil hole filled with packing. Put a few drops of oil in each until the packing is thoroughly saturated.

A small plug with a tag attached will be noticed between the valve assembly and the pump. Following the instructions printed on the tag, remove this plug and empty the remainder of the oil in the can into this reservoir, replace the plug and tighten. **Under no condition should the motor be started until it has been oiled according to the instructions.**

Among the accessories in one of the drawers will be found a nickel-plated casting for holding the air hoses and handles. Screw this to the right hand side of the cabinet, using the holes drilled for this purpose.

Assemble the spray bottles and nebulizers and place in the half circle arrangement of holes on the top panel.

On the back of the milliampere Meter are three posts which are to be fitted into the three corresponding sockets in the upper center of the front panel. Push the Meter posts firmly into these sockets until the Meter rests flush against the panel. If not tight, the Meter will fluctuate or fail to register.

The actual operation of this equipment has been made exceedingly simple and by carefully following instructions, the novice can obtain as brilliant results as the masters.



# Operation

On the right hand side of the cabinet will be found an electrical outlet, and among the accessories, an attachment cord, one end of which is equipped with a standard attachment plug, and the other with a special plug for the cabinet connection. Connect the special plug to the electrical outlet on the side of the cabinet, and screw the standard attachment plug into any electric light socket furnishing a current exactly the same as that specified on the name plate of the apparatus. *Do not attempt to operate this equipment on any other kind of current.* The apparatus is now ready for use.

The Universal Super-Diatherm embodies six modalities, and, for the sake of clarity, the operation of each will be considered under separate captions as

Diathermy
Pressure
Suction
Diagnostic Lamps
Cautery
Sinusoidal

The main electrical connection on the side of the cabinet furnishes current to all of the various operating parts and the separate modalities are obtained by use of the various switches found on either the top or the front panels. Until the operator becomes thoroughly familiar with the apparatus and its controls, this instruction book should be freely used for reference to prevent any accidental injury to the equipment.

# Diathermy

Two switches are provided for controlling the Diathermy current, a Foot Switch and a hand control labeled High Frequency Switch. At the lower right hand corner of the front panel will be found an electrical outlet connection marked FOOT SWITCH. Insert the special plug on the Foot Switch cord into this connection. Pressure with the foot on the edge of the Foot Switch turns the current ON, and releasing the pressure turns the current OFF. (See Pilot Light.) It is evident that the Foot Switch should be used only for short, interrupted applications of current as in Surgical Diathermy, Fulguration, Desiccation, etc. When using the Foot Switch, the High Frequency

**The Foot Switch**

Switch must be in the OFF position. For sustained applications of current, as in Diathermy, Auto-condensation, etc., the hand High Frequency Switch should be used. This switch will be found on the right hand side of the front panel, and plainly labeled High Frequency Switch. Pushing up on the switch knob turns the current ON, and pushing down turns the current OFF. When the switch is in the ON position, a small white dot shows at the base of the knob. This switch may be used even though the Foot Switch is connected, but the Foot Switch can not be used unless the High Frequency Switch is on the OFF position. When the cabinet is not in use for Diathermy, always be sure that the High Frequency Switch is turned OFF.

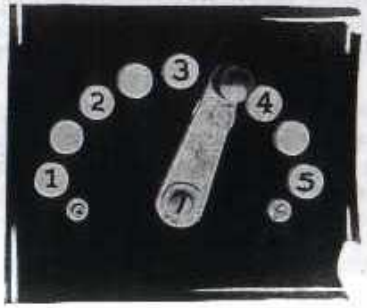
**High Frequency Switch**

In the upper right hand corner of the front panel is the PILOT LIGHT. The sole purpose of the Pilot Light is to inform the operator whether the Diathermy current is on or off. The Pilot Light glows when the current is ON and goes out when the current is turned OFF. After long use the Pilot Light globe, an ordinary electric bulb, may burn out and the Pilot Light fail to function. However, this does not interfere with the operation of the cabinet, and it is not necessary to discontinue use of the apparatus on this account. To replace a Pilot Light globe, take out the two screws holding the red jewel in place, remove the jewel, and the globe is accessible to be changed exactly as any electric light globe.

**The Pilot Light**

To the left of the Pilot Light on the front panel is the MAIN CURRENT CONTROL SWITCH, consisting of a movable lever and a series of contact buttons, part of which are numbered and part of which are blank. The Main Current Control Switch controls the amount of current being delivered to the transformer in the Diathermy section, and subsequently, the milliamperage to the patient. The use of this switch is closely co-ordinated with the adjustment of the Spark Gaps. (See Spark Gaps.) Only the numbered contact buttons are connected to the transformer, and *if*

**Current Control Switch**

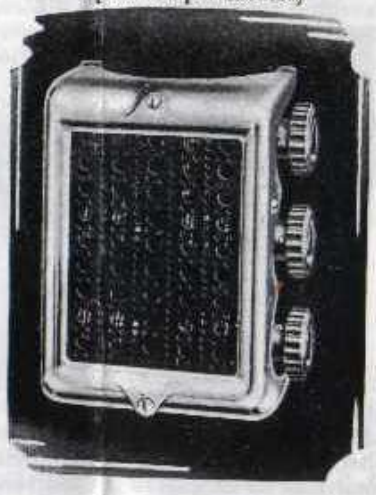





*the lever is placed on one of the blank buttons, no current will pass.* The purpose of the blank buttons is to prevent arcing when the switch lever is moved across the "live" buttons. In beginning treatment the Main Current Control Switch lever is always placed on the button numbered 1, and advanced to the higher buttons only as necessary to maintain even sparking at the Spark Gaps. (See Spark Gaps.)

At the right hand side on the top panel, is the SPARK GAP assembly, built in three units and covered by a safety guard. The Spark Gaps are the main control of the amount of current to the patient. Turning the insulated knob at the right of each unit in a direction away from the operator *closes* the gap, and in the opposite direction, *opens* the gap. Opening the gap increases the milliamperage, and closing, decreases. One, two or all three of the sections may be used, according to the intensity of the current desired. If a very small amount of current is needed, as in mild Desiccation, open but one unit of the Spark Gap assembly, leaving the other two closed. If slightly more current is necessary, open another unit, and, if indicated, open all three sections. The Spark Gaps are never opened wide, the limit being about one full turn of the knobs. It is customary when giving Diathermy, Auto-condensation, or any other treatment requiring comparatively large dosage, to use all three units simultaneously. The treatment is begun by opening one unit of the Spark Gap very slightly until sparking begins between the points. The second unit is then opened the same distance, and finally the third unit the same amount. If the gaps are opened too far, the sparking between the points will become very uneven and may cease entirely. This indicates that not enough voltage is being delivered from the transformer, and the Main Current Control switch must be advanced to the next highest numbered button. The correctly co-ordinated operation of the Spark Gaps and the Main Current Control switch consists of opening slightly each unit of the Spark Gap until sparking occurs evenly between all of the points, and if this does not deliver the desired current volume, advance the Main Current Control switch to the button numbered 2. If the dosage is still insufficient, open each unit of the Spark Gaps a very little more. If still more current is desired, advance the Main Current Control switch to Button 3, etc. In other words, advance the Main Current Control switch lever, *before* the sparking between the points becomes irregular. Always begin treatments with the

**Spark Gap Assembly**



Main Current Control switch on Button 1 and the Spark Gaps closed, progressively increasing the current to the desired amount.

In the center of the front panel is the Milliampere Meter assembly consisting of the MILLIAMPERE METER, a small FUSE for protecting the Meter against overload, and a METER CONTROL switch, marked with a plate bearing the caption "Meter Switch, Low, High, Out." The Meter is arranged with two scales, one, the lower, ranging from 1-1,000 milliamperes, and the other, the upper, from 0-4000 milliamperes. The Meter Control switch determines which of the scales is being used and *has nothing to do with changing the quantity or quality of the current.* When the Meter Control switch is placed on the button marked LOW, the Meter is automatically set to be read on the lower scale, 0-1000. Thus, if the controls of the machine are set to deliver a current of 750 milliamperes, the needle of the Meter would be about three-quarters of the way across the scale to the right. It is evident that further increase in current would send the needle almost off the scale to the right and result in either burning out the fuse, or damage to the Meter. However if the Meter Control switch lever is placed on button HIGH, 750 milliamperes will advance the needle very little, as 750 milliamperes on the upper scale is below the first heavily marked division. Consequently, for current volume over 750 milliamperes, the Meter Control switch lever must be placed on the button marked HIGH, and the upper scale used for reading. The Meter may be completely disconnected from the circuit by placing the lever on the button marked OUT. The Meter will not register unless circuit is completed through patient or substitute. Meter does not register when mono-polar terminal is used.

**Meter Assembly**

## THE FREQUENCY SELECTOR

To the left of the Meter Control switch on the front panel is the Frequency Selector switch consisting of a movable lever and two contact buttons, marked with a plate bearing the caption "Frequency Selector, Low, High." When this switch lever is on the button LOW, all the high frequency modalities operate at a frequency of 800,000, and when on HIGH, at a frequency of 1,500,000. This selector remains on button LOW for all treatments except Auto-condensation, when it is moved to HIGH.

**Frequency Selector**

In the lower left hand corner of the front panel are arranged the Treatment Terminals, consisting of four bi-terminal outlets and one mono-terminal outlet, meaning that on the four outlets arranged in line two cords are necessary to complete a circuit through the patient, and on the large raised outlet directly above them, one cord is necessary. The bi-terminal outlets are marked, INDIFFERENT, LOW VOLTAGE, MEDIUM VOLTAGE and HIGH VOLTAGE. The Indifferent terminal is always used as one connection in the bi-terminal circuit in conjunction with one of the other terminals. That is the connections are made with one cord to the Indifferent terminal and the other to the Low Voltage terminal, or one to the Indifferent terminal and one to the Medium Voltage terminal, or one to the Indifferent terminal and one to the High Voltage terminal.

When the Indifferent and Low Voltage terminals are used, the resulting current is a D'Arsonval current of comparatively low voltage and low amperage, and produces a mild heating effect. It is used for treating small parts with Diathermy, as fingers, toes, ear, etc.

**Treatment Terminals**

When the Indifferent and Medium voltage terminals are used, the resulting current is a D'Arsonval current of medium voltage and high amperage and produces a strong heating effect. This connection is used for Diathermy applications requiring great heat, for Surgical coagulation of large masses, and for Auto-condensation when the heat and large milliampere doses are the desired factors. *This connection produces the highest milliamperage of any on the apparatus.*

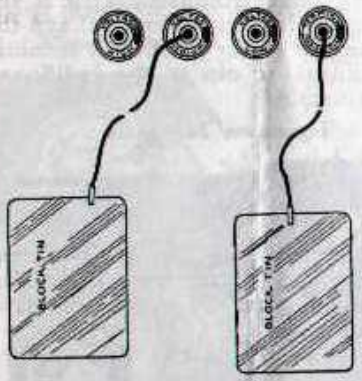
When the Indifferent and High voltage terminals are used, the resulting current is a Tesla current of high voltage and low milliamperage. It has little heating effect, being especially designed for Auto-condensation treatment of high blood pressure, in which high milliamperage and heat production are not the desirable factors. Current volumes of more than 350 to 400 milliamperes are seldom indicated in the treatment of hypertension.

## When to Use the Foot Switch

When using the mono-terminal outlet, the resulting current is the characteristic high voltage low milliamperage Oudin current. It is used in the methods termed Indirect Diathermy, Desiccation, Fulguration, and for energizing vacuum electrodes. When treating from the Oudin terminal in any of the Surgical methods or Indirect applications, a Foot Switch should be used.

## Connections for Direct Diathermy

Attach one of the rubber covered treatment cords to the Indifferent terminal and to one of the electrodes selected for use. Attach the other treatment cord to the other electrode and to either the Low or Medium voltage terminal, depending upon the part to be treated. Set the Main Current Control switch on Button 1. See that all three units of the Spark Gaps are closed. Set the Meter Control switch on button Low. Turn the current on at the hand High Frequency switch, and open one of the units of the Spark Gaps as explained on Page 5. If the milliampere Meter indicates that more than 750 milliamperes will be used during the treatment, switch the meter control switch to button High. In giving a direct Diathermy treatment with the connection made to the Low Voltage terminal, if it is found that sufficient current cannot be obtained after advancing the Main Current Control switch to Button 3 or 4, turn the current OFF, transfer the treatment cord from the Low voltage to the Medium voltage terminal and begin the treatment over. When terminating the treatment, slowly close all sections of the Spark Gap and return the Main Current Control lever to Button 1 before turning the current off at High Frequency.




## Connections for Indirect Diathermy

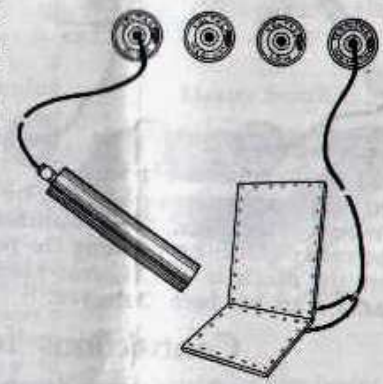
Attach one of the rubber covered treatment cords to the Auto-condensation pad and to the mono-terminal outlet. Connect the Foot Switch as outlined on Page 3. In treating by the Indirect method, the apparatus should be adjusted before the current is applied to the patient. Set the Meter Control Switch on the button marked Out, as the Meter is not used with the mono-terminal outlet. Set the Main Current Control switch on Button 2 or 3. See that the hand High Frequency switch is in the OFF position. Open each unit of the Spark Gaps until a smooth sparking occurs between the points when pressure is made on the Foot Switch. With

the current OFF, seat the patient upon the pad, or if on a table, lay him on the pad, place the tips of the fingers of one hand over the area to be treated, and turn the current ON by pressing on the Foot Switch. If excessive heat or lack of heat necessitates adjusting the controls, first turn the current OFF by releasing the pressure on the Foot Switch, then make the necessary adjustment, replace the fingers, and again turn the current ON. As the operator's fingers constitute one electrode in this method of treatment, never allow them to break contact with the patient while the current is ON. This eliminates the possibility of sparking between the patient and the operator.

## Connections for Auto-Condensation

### Tesla

Attach one of the rubber covered treatment cords to the Indifferent terminal and to the Auto-condensation pad. Attach the other rubber covered treatment cord to the High voltage terminal, and to the metal Auto-condensation handle. Seat or recline the patient on the Auto-condensation pad, and place a heavy folded towel or small pillow on the knees if seated, or on the abdomen if reclining, and after grasping the handle, instruct the patient to allow the hands to rest on this support. Some operators prefer the use of a block tin plate, 6x8, in skin contact on the upper right quadrant of the abdomen and held in place by a heavy sand bag, in place of the handle held in the hands. Set the apparatus as for the beginning of all treatments, and slowly advance the current until the desired volume is reached. In Tesla Auto-condensation high milliampere dosages are not used, and the Meter should not read more than 350 to 400 milliamperes.

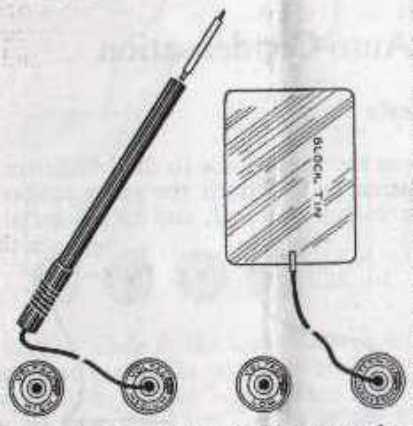


### D'Arsonval

Proceed exactly as outlined for Tesla Auto-condensation except with one treatment cord connected to the Medium voltage terminal instead of to the High voltage terminal. D'Arsonval Auto-condensation is not used in the reduction of high blood pressure, although it has some slight value in accelerating eliminative processes.

## Connections for Electro-Coagulation

Attach one of the rubber covered treatment cords to the Indifferent terminal and to a block tin plate, 6x8. This electrode is applied to any convenient place on the patient's body, either bound on the thigh or arm, or placed under the hips or back if reclining. Connect the Plank Surgical electrode to the Medium voltage terminal. Connect the Foot Switch as previously outlined. As in Indirect Diathermy treatments, the apparatus should be adjusted before the coagulation is actually begun. The novice can readily determine this adjustment by trying out various settings on a piece of raw beef, as the degree of tissue destruction in human tissue and the meat are quite similar. Having obtained satisfactory anesthesia, and with the apparatus in readiness, insert the needle into the tissue to be destroyed to the required depth to accomplish the necessary destruction. This will be governed entirely by the depth of the mass to be destroyed. With the needle inserted, make short, interrupted applications of current by pressing on the Foot Switch, until the tissue around the needle blanches, and small bubbles appear. Turn the current OFF by releasing the pressure on the Foot switch, and insert the needle in an adjacent place, continuing the process until the entire mass has been destroyed.




## Connections for Fulguration

Insert the Fulguration electrode into the High Frequency handle and connect the cord attached to the handle to the mono-terminal outlet. Connect the Foot Switch as previously outlined. As in other Surgical procedures, adjust the apparatus to the required current before beginning the actual operation. This may be determined roughly by holding the Fulguration electrode point about one-quarter of an inch away from a metal surface, and adjust the current until sparking occurs freely between the electrode and the metal. Having obtained satisfactory anesthesia, local usually suffices, hold the Fulguration point about one-eighth of an inch from the lesion to be destroyed and allow the sparks to spray upon it until the tissue is visibly charred.

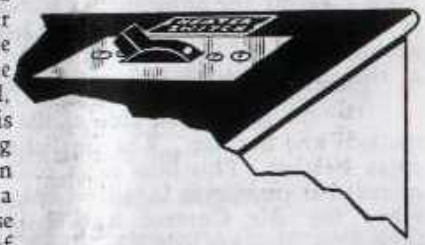
## Connections for Desiccation

The connections for Desiccation are exactly the same as for Fulguration and the difference lies in the method of application. In Desiccation, the needle is brought into direct contact with the tissue or even inserted into it. The application of current continues until the current whitens. Sparking should not occur between the electrode and the patient in Desiccation.

## Pressure and Suction

**Spray Bottle Heater.** In the center of the top panel are the six receptacles for the Spray bottles and Nebulizers arranged in a semi-circle. Underneath these is a built-in heater for maintaining even temperature in the solutions used in the bottles. This heater is controlled by a switch on the right hand side of the rear of the top panel, and is plainly marked, "Heater Switch." The heater is turned OFF and ON by pushing the knob to the right or left. When the switch is in the ON position a small white dot appears at the base of the knob, and the red glow of the heater can be seen through the spray bottles. The heater may be turned ON and left on to maintain proper temperature in the spray bottle solutions even though the apparatus is not in immediate use. However, care should be exercised that the Heater is turned OFF when leaving the office for any great length of time as at the close of the day.

Heater Switch



## The Motor Switch

On the left hand side to the rear of the top panel is the Motor Switch which controls the motor furnishing the power to operate the air pump. This switch is plainly marked "Motor Switch," and is operated in the same manner as the other switches on the apparatus. When any of the air modalities are to be used, it is necessary to first turn this switch ON and start the motor.

In the center of the top panel, just to the rear of the spray bottles, is the Control Handle which allows the operator to select any of the air modalities without changing hose connections. This handle is equipped with a pointer which shows the modality on the quadrant in which the handle turns. These are plainly marked, "Pressure Vibration,' "Pressure," "Oil," "Vacuum," and "Vacuum Vibration, DeVilbiss." The purpose of these is quite self-evident. When a vibratory pressure is wanted, the Control handle is turned until the pointer indicates "Pressure Vib." If a steady pressure without the vibration is desired, the Control handle is turned to "Pressure." If vibratory suction is to be used, the control is turned to "Vacuum Vib.;" if steady suction without vibration, to "Vacuum." When the spray bottles and nebulizers are needed, the control is set on the combination marking "Vacuum Vib., DeVilbiss." The "OIL" modality is the patented feature which eliminates the necessity of constant attention to the motor and pump. When the Control is turned to "OIL" the motor and pump are sprayed with a film of oil from the reservoir, which *must be filled as instructed on Page 2 before the apparatus is placed in operation.* When the motor is running but the modalities are not being used, the Control handle should point to "Oil," and at the termination of treatments, be placed at the oiling position before turning the "Motor Switch" off.

**Air Control Handle**

On the right hand side of the cabinet are the two air hose connections and handles. The smaller of these is used exclusively for the spray bottles. This hose is so connected that pressure is furnished only when the Air Control handle is turned to "Vacuum Vib., DeVilbiss." The spray bottle handle is equipped with a volume valve control which may be operated by the thumb pressing on the valve release handle, or, by adjusting the small thumb nut, the valve release can be held down constantly. The amount of air pressure released into the DeVilbiss bottles depends entirely upon the amount the valve release is depressed. This can also be regulated to the wishes of the operator by a small thumb nut on the release.

**Air Hose Handles**

The larger of the two handles is used for all of the remaining air modalities, and is so connected, that the Air Control handle selects the type of the modality, coming into the hose. This handle is also furnished with a valve by which the volume of the air may be controlled at will. On the back of the handle near the top is a small valve with a hole in it, which may be loosened or tightened in the handle by turning as a screw is turned. When loosened in the handle, part of the air coming through the hose is allowed to escape through the hole in the valve, and by placing the thumb over the hole, any desired volume may be had. When this valve is screwed down tightly, all of the air goes through the handle, and the instrument in use receives the full volume generated.

The fitting on the end of the handle is also removable so that various types of electrodes or accessories may be used. When glass cupping devices are attached, the metal fitting is removed and replaced with the fitting having the rubber gasket inside to hold the glass tips of the cups. Any standard accessory for pressure or suction apparatus can be used with the Universal Super-Diatherm in addition to those accessories furnished.

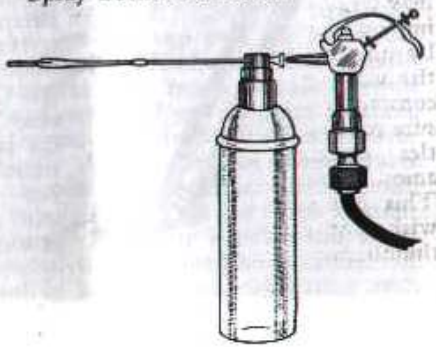
# Connections for Using Pressure and Vacuum Accessories

## DeVilbiss Spray Bottles

### (Atomizers, Nebulizers and Powder Blowers)

Select the spray bottle to be used and connect to the air hose with the small handle, by slipping the nozzle of the handle into the intake on the spray bottle. Turn the motor on by the "Motor Switch," turn the Air Control handle pointer to the marking "Vacuum Vib., DeVilbiss," and depress the valve release on the handle with the thumb until the desired amount of spray is obtained. The solution in the bottles may be kept warm by leaving the spray bottle heater on even though the apparatus is not in use. The gauge does not register the pressure used, being connected only on the vacuum modalities.

**Spray Bottle Connection**



## Cupping Devices

In using either the plain cup, in the Bier method of creating hyperemia, or the cup with the trap, for cupping boils or abscesses, the large air hose handle is used. Unscrew the metal nozzle on the end of the handle and replace with the special nozzle with the rubber gasket for holding the glass tips of the cups. Turn the Motor Switch on, turn the Air Control handle pointer to "Vacuum," and loosen the valve in the handle so that the air volume may be controlled with the thumb. (See page 12.) Apply the cup as needed, and by carefully bringing the thumb over the hole in the valve, create the desired amount of suction. To release the suction, remove the thumb from the valve hole.

**Cupping Connection**

**Suction Massage Connection**

## Suction Massage

The large air hose handle with the metal nozzle in place is fitted with the large rubber cup. Start the motor by turning the Motor Switch on. Place the Air Control handle pointer on "Vacuum Vib." For massage purposes, the valve on the handle can be screwed down tightly and suction maintained without the thumb control. If such treatment is too severe, it can be modified by resorting to the thumb over the loosened valve.

**Pressure Massage Connection**

## Pressure Massage

Many variations in the application of pressure massage are available by utilizing the different types of accessories and applicators. The apparatus settings are the same in all treatments of this nature. Start the motor at the Motor Switch, turn the Air Control handle pointer to "Pressure Vib.," and loosen the valve in the large air hose handle so that the thumb valve control may be used. For plain massage, attach vibratode, with soft rubber cap to handle and use as ordinary vibrator.



Much favorable comment has been given to the use of the Pennington in painless rectal dilatation. The rapid vibration produces more or less analgesia, and good relaxation, and the taper of the cone, combined with the constant pressure of the electrode, easily forces the cone into the rectum. The cone should be lightly lubricated with a standard lubricant before beginning the insertion. At the beginning of the application, a mild air volume, controlled by the thumb, should be used, particularly if the condition is painful. In the later stage, the thumb valve may be screwed down tightly, and the full volume employed. Place the Air Control handle on "Pressure Vib."

**Pennington Cone Connection**

# Massage of the Ear

An exceptionally useful modality is the use of the heater and the large rubber cup for massage of the ear and middle ear. Attach the heater to the large air hose handle by slipping it on to the metal nozzle. With the insulated cords, connect the heater to the Cautery current terminals, and pull out the Cautery control about one-third of its length. (See Page 17.) Slip the large rubber massage cup over the heater attachment. The holes drilled laterally through the heater nozzle prevent a direct blast of air from reaching the ear, and the application is pleasingly mind. Use the thumb valve to control the volume, which should be retained within the limits of comfort. If the air is either too warm or too cold, adjust the Cautery control to the desired temperature. A mild, warm air blast may be used in any condition indicating such treatment, by using the same attachments, and moving the Air Control handle pointer to even "Pressure."

**Middle Ear**

## Eustachian Tube Opener

**Connection for Air Pressure to Eustachian Tube**

Start the motor at the Motor Switch. Set the Air Control handle pointer to "Pressure." Attach the Eustachian tube opener to the large air hose handle. Loosen the thumb valve so that the thumb control may be used. Insert the applicator into the ear and apply pressure very gradually, controlling the volume by the thumb. Care must be used not to apply a sudden great volume which would result in pain and possible danger to the ear structures.

## Suction in Tonsillectomy

Although the Universal Super-Diatherm Outfit does not include a Suction bottle for clearing fields of operation, the apparatus can be used most successfully for this purpose by the addition of such a bottle to the accessories. The motor is started in the usual manner and the Air Control handle pointed to "Vacuum." The large air hose handle is fitted with the adapter furnished with the Suction bottle to attach the rubber hose. The thumb valve on the handle is tightened or loosened to obtain the desired vacuum as shown on the vacuum gauge. Care must be used to see that the Suction bottle does not fill completely and allow foul matter to reach the operating parts of the apparatus. However, the capacity of this bottle is such that under ordinary conditions it will take care of all matter aspirated during an operation.

## Suction for Sinus Cleansing

By substituting a special Sinus Cleanser and bottle for the Suction bottle as described in the Tonsil Suction, the apparatus may be used for this very important treatment. The thumb valve on the large air hose handle is adjusted to obtain the required amount of vacuum as shown on the gauge.



## Cautery, Diagnostic Lamps, Sinusoidal

On the left side of the top panel is a switch marked "C-D-S Switch." This controls the current to the Cautery, Diagnostic Lamp and Sinusoidal modalities. In front of this switch is the Cautery, Diagnostic Lamp and Sinusoidal Selector Switch consisting of a movable lever and three contact buttons marked "C," "D," and "S." On the extreme left of the top panel are two binding posts, which are the outlets for these currents. In the upper left corner of the front panel is a black insulated knob which pulls out, and is labeled "C-D-S Control." This entire assembly controls both the modality and the volume of the currents used for Cautery, Diagnostic Lamp and Sinusoidal applications. The C-D-S Control is arranged on a principle which does not involve the use of contact buttons, and, therefore, the current can be increased or decreased without any sudden changes in volume.

**CAUTERY.** Connect the cautery handle to the binding posts on the left side of the top panel, using the insulated cords furnished for the purpose. Set the C-D-S Selector switch on the contact button "C." Turn the current on at the C-D-S switch by pushing the knob. Pull out the C-D-S Control on the front panel until the cautery knife glows with the desired amount of heat.

**DIAGNOSTIC LAMPS.** Connect the Diagnostic Lamp to the binding posts on the left side of the panel. Set the C-D-S Selector switch on the Button "D." Turn the current on at the C-D-S switch and pull out the C-D-S Control on the front of the panel until the diagnostic lamp glows with the desired brilliancy.

Note:—In using the Diagnostic Lamps requiring very mild currents, as in cystoscopes, set the C-D-S Selector switch on the Button "C," exactly as for cautery, to gain the benefit of the lower voltage delivered from the "C" connection.

**SINUSOIDAL.** Connect either the Sinusoidal handles or discs to the binding posts on the left of the top panel, using the rubber covered treatment cords for this purpose. Set the C-D-S selector switch on button "S." Turn the current on at the C-D-S switch, and adjust the current to the desired amount by pulling out on the C-D-S Control on the front panel.

## Uses for the Universal Super-Diatherm

**Diathermy** in the treatment of all conditions responding to heat created deep within the tissues.

**Fulguration** for the destruction of superficial skin lesions, warts, moles, etc.

**Desiccation** for dehydrating and destroying tissue as in tonsils, etc.

**Electro-coagulation** for tissue destruction of all kinds, cancer, hemorrhoids, tumors, etc.

**Auto-condensation** for reduction of high blood pressure.

**Diagnostic Lamp** control for all types of diagnostic lamps, Cameron, cystoscopic, transillumination, etc.

**Actual Cautery** for tissue destruction in which the action of actual cautery is indicated.

**Rapid Sinusoidal** current for testing and treating muscle and nerve injury.

**Air pressure** for spraying, nebulizing, powder blowing, etc.

**Air pressure** for opening congested eustachian tubes.
**Pneumatic massage** for treatment of skin and muscle conditions. Superior to vibratory massage.

**Rectal Dilatation** using the pneumatic massage in conjunction with the Pennington cone.

**Ear massage** with heated air in the treatment of deafness and middle ear conditions.

**Air pressure** for vaporizing and administering ether to face mask, ether tube, or mouth gag.

**Suction** for removing blood and fluid from fields of operation.

**Suction** for cupping in the treatment of boils, abscesses, etc.

**Suction** for the production of artifical hyperemia by the Bier method for the treatment of inflammatory conditions.

**Suctions** for evacuating pus from congested sinuses and naso-pharyngeal spaces.

**Suction** for drawing tonsil from the bed to simplify enucleation.

**Suction** for tonsil treatment by the Waring technic.

## MEMORANDA